Cutler-Hammer

XTPR Frame B Manual Motor Protector

User Manual

May 2006
New Information

May 2006

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Cover Photo: Frame B XTPR Manual Motor Protector

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Safety

Definitions and Symbols

⚠ WARNING

This symbol indicates high voltage. It calls your attention to items or operations that could be dangerous to you and other persons operating this equipment. Read the message and follow the instructions carefully.

⚠ ADVERTENCIA

Este símbolo indica alto voltaje. Llama su atención hacia elementos u operaciones que podrían ser peligrosas para usted y para otras personas que operen este equipo. Lea el mensaje y siga las instrucciones cuidadosamente.

⚠ AVERTISSEMENT

Ce symbole signale une haute tension. Il attire l'attention sur des éléments ou actions susceptibles de présenter un danger pour les personnes utilisant ce matériel. Lire le message et suivre les instructions avec attention.

This symbol is the "Safety Alert Symbol." It occurs with either of two signal words: CAUTION or WARNING, as described below.

Este símbolo corresponde al "Símbolo de alerta de seguridad". Se encuentra en dos palabras de advertencia: PRECAUCIÓN o ADVERTENCIA, según se describe a continuación.

Ce symbole est le « symbole d'alerte à la sécurité ». Il accompagne les termes de mise en garde ATTENTION ou AVERTISSEMENT décrits ci-dessous.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.

⚠ ADVERTENCIA

Indica una situación potencialmente peligrosa que, de no evitarse, puede provocar lesiones graves o la muerte.

⚠ AVERTISSEMENT

Indique une situation potentiellement dangereuse qui, si elle n'est pas évitée, peut entraîner des blessures graves ou la mort.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the product. The situation described in the CAUTION may, if not avoided, lead to serious results. Important safety measures are described in CAUTION (as well as WARNING).

⚠ PRECAUCIÓN

Indica una situación potencialmente peligrosa que, de no evitarse, puede provocar lesiones menores a moderadas; o graves daños al producto. Es posible que si no se evita la situación descrita en PRECAUCIÓN, ésta provoque graves consecuencias. Las medidas de seguridad importantes se describen en la PRECAUCIÓN, así como también en la ADVERTENCIA.

⚠ ATTENTION

Indique une situation potentiellement dangereuse qui, si elle n'est pas évitée, peut entraîner des blessures mineures à moyennes ou des dommages graves du produit. La situation décrite dans la mise en garde ATTENTION peut, si elle n'est pas évitée, avoir des conséquences graves. Des mesures de sécurité importantes sont fournies sous ATTENTION (ainsi que sous AVERTISSEMENT).

Hazardous High Voltage

⚠ WARNING

Motor control equipment and electronic controllers are connected to hazardous line voltages. When servicing drives and electronic controllers, there may be exposed components with housings or protrusions at or above line potential. Extreme care should be taken to protect against shock.

Stand on an insulating pad and make it a habit to use only one hand when checking components. Always work with another person in case an emergency occurs. Disconnect power before checking controllers or performing maintenance. Be sure equipment is properly grounded. Wear safety glasses whenever working on electronic controllers or rotating machinery.

⚠ ADVERTENCIA

El equipo de control del motor y los controladores electrónicos se conectan a voltajes de línea peligrosos. Al realizar mantenimiento a los accionamientos y controladores electrónicos, pueden haber componentes expuestos con aberturas o protuberancias en la línea o debajo de ésta. Se debe tener sumo cuidado para protegerse de las descargas.

Párese en una almohadilla aislante y hágalo un hábito para usar sólo una mano cuando inspeccione los componentes. Siempre trabaje con otra persona en caso de que se produzca una emergencia. Desconecte la energía antes de inspeccionar los controladores o realizar mantenimiento. Compruebe que el equipo esté adecuadamente conectado a tierra. Use anteojos de seguridad siempre que trabaje con controladores electrónicos o maquinaria giratoria.

⚠ AVERTISSEMENT

Le matériel de commande moteur et les contrôleurs électroniques sont raccordés à des tensions de secteur dangereuses. Lors d'interventions sur les moteurs et contrôleurs électroniques, certains éléments exposés peuvent présenter des logements ou saillies au même potentiel que la secteur ou au-dessus. Faire preuve de la plus grande prudence pour se protéger contre les électrisations.

Se tenir sur une plaque isolante et prendre l'habitude de n'utiliser qu'une seule main pour contrôler des pièces. Toujours travailler en présence d'une autre personne pour les cas d'urgence. Débrancher l'alimentation avant de vérifier les contrôleurs ou d'effectuer l'entretien. Vérifier que le matériel est correctement relié à la terre. Porter des lunettes de sécurité pour toute intervention sur des contrôleurs électroniques ou des machines tournantes.

⚠ WARNING

Before commencing the installation:

- Disconnect the power supply of the device.
- Ensure when resetting overload that devices cannot be accidentally restarted.
- Verify isolation from the supply.
- Connect to earth and short-circuit.
- Cover or fence off adjacent live parts.
- Follow the installation instructions included with the device.
- Only suitably qualified personnel in accordance with EN 50110-1/-2 (VDE 0105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The rated value of the mains voltage may not fluctuate or deviate by more than the tolerance specified, otherwise malfunction and hazardous states are to be expected.
- Panel-mount devices may only be operated when properly installed in the cubicle or control cabinet.

⚠ ADVERTENCIA

Antes de comenzar la instalación:

- Desconecte el suministro de energía del dispositivo.
- Compruebe al restablecer la sobrecarga que los dispositivos no se puedan arrancar de nuevo accidentalmente.
- Verifique el aislamiento del suministro.
- Conecte a tierra y cortocircuite.
- Cubra o separe las piezas adyacentes con corriente.
- Siga las instrucciones de instalación que se incluyen con el dispositivo.
- Sólo personal adecuadamente capacitado en conformidad con la norma EN 50110-1/-2 (VDE 0105 Parte 100) puede trabajar en este dispositivo/sistema.
- Antes de la instalación y de tocar el dispositivo compruebe que usted esté libre de carga electrostática.
- El valor nominal del voltaje de alimentación no debe fluctuar ni desviarse más allá de la tolerancia específica, de lo contrario se esperan condiciones de mal funcionamiento y de peligro.
- Los dispositivos de montaje en el panel sólo se pueden operar cuando estén adecuadamente instalados en el cubículo o en el gabinete de control.

⚠ AVERTISSEMENT

Avant de débuter l'installation :

- Débrancher l'alimentation électrique de l'appareil.
- S'assurer qu'aucun appareil ne peut redémarrer accidentellement lors du réarmement du relais.
- Vérifier l'isolement par rapport à l'alimentation.
- Raccorder à la terre et court-circuiter.
- Couvrir ou clôturer les éléments sous tension avoisinants.
- Suivre les instructions de pose fournies avec l'appareil.
- Seul du personnel qualifié en vertu de EN 50110-1/-2 (VDE 0105 Part 100) est autorisé à travailler sur ce dispositif/système.
- Avant la pose et avant de toucher l'appareil, veiller à n'être porteur d'aucune charge électrostatique.
- La valeur nominale de la tension de secteur ne doit pas fluctuer ni dévier de plus de la tolérance indiquée afin d'éviter les mauvais fonctionnements ou les états dangereux.
- Les appareils à monter sur panneau ne doivent être utilisés que s'ils sont correctement posés dans la cabine ou l'armoire de commande.

Warnings and Cautions

⚠ WARNING

The selected current overload protection system must not only ensure proper motor current monitoring, but also that the seized motor is switched off within the temperature rise time t_E. This means that the protective device must be rated in such a way to ensure that the tripping time t_A for the ratio I_A/I_N of the EEx e motor is not higher than its temperature rise time t_E according to its characteristics curve, in order to safely switch off the motor within that period.

⚠ ADVERTENCIA

El sistema de protección de sobrecargas por corriente seleccionado no sólo debe garantizar la supervisión correcta de la corriente del motor, sino que también el motor agarrotado se apague dentro del tiempo de aumento de la temperatura t_E. Esto significa que el dispositivo de protección debe estar clasificado de forma de garantizar que el tiempo de desconexión t_A para la proporción I_A/I_N del motor EEx e no sea mayor que su tiempo de aumento de la temperatura t_E según su curva característica, a fin de apagar con seguridad el motor en dicho período.

⚠ AVERTISSEMENT

Le système de protection contre les surintensités choisi doit non seulement assurer un suivi correct de l'intensité du moteur, mais également une coupure d'alimentation d'un moteur bloqué dans les limites de la durée de montée en température t_E. Ceci signifie que les caractéristiques nominales de l'appareil de protection doivent être telles que la durée de déclenchement t_A pour le rapport I_A/I_N du moteur EEx e ne dépasse pas sa durée de montée en température t_E en vertu de sa courbe caractéristique, afin de couper la moteur dans ce délai.

⚠ WARNING

A manual reset may be carried out locally by trained personnel or in the control room.

⚠ ADVERTENCIA

Un restablecimiento manual se puede llevar a cabo localmente o en la sala de control por personal capacitado.

⚠ AVERTISSEMENT

Le réarmement manuel peut être effectué sur place par du personnel qualifié ou depuis la salle de commande.

⚠ WARNING

Faulty devices may not be opened for repairs and may only be replaced by qualified personnel.

⚠ ADVERTENCIA

Los dispositivos defectuosos no se deben abrir para su reparación y sólo los debe cambiar personal calificado.

⚠ AVERTISSEMENT

Ne pas ouvrir les appareils défectueux pour les réparer et les faire changer exclusivement par du personnel qualifié.

⚠ CAUTION

If the manual motor protector is installed at a cool location (e.g. 23°F [-5°C]) and the motor is installed at a warm motor location (e.g. 104°F [40°C]), it is possible that there will be a delayed release during an overload if the devices are operated in the lower current setting range.

⚠ PRECAUCIÓN

Si la protección manual del motor se instala en un lugar frío (por ejemplo, a -5° C [23° F]) y el motor en un lugar cálido (por ejemplo, a 40° C [104° F]), es posible que haya una desconexión retardada durante una sobrecarga si los dispositivos se operan en un margen de intensidad de regulación más bajo.

⚠ AVERTISSEMENT

Si le dispositif de protection de moteur manuel est installé dans un endroit froid (-5°C [23°F], par ex.) et le moteur dans un endroit chaud (40°C [104°F], par ex.), il est possible qu'il y ait un retard de déclenchement en cas de surintensité si les appareils fonctionnent dans la plage de réglage d'intensité inférieure.

Chapter 1 — About This Manual

This manual applies to the XTPR Frame B Manual Motor Protector.

It describes the overload monitoring system for the protection of motors operating in potentially explosive atmospheres (EEx e areas).

Target Group

This manual addresses skilled personnel who install, commission and service the manual motor protector.

Abbreviations

The abbreviations used in this manual have the following meanings:

Table 1-1: Abbreviations

Abbrev.	Meaning
EEx e	"Increased safety" degree of protection (European markets)
PTB	**P**hysikalisch **T**echnische **B**undesanstalt. German Federal Testing Laboratory: Accredited certification authority for devices operated in **EEx** e areas (European markets).
NM	Lowest possible setup current
HM	Highest possible setup current

Chapter 2 — XTPR Frame B Manual Motor Protectors

Preface

In addition to the degree of protection specified in the standards EN 60079-14 and VDE 0165 Part 1, further provisions have been made to ensure safety from ignition for motors operated in potentially explosive atmospheres. EN 50019 prescribes additional measures to be taken for the operation motors with “increased safety” type of protection “e”. These measures improve the degree of safety and prevent impermissible high temperature and development of sparking and arcing, which is usually not found when motors are operated under normal conditions. The motor protective devices used for this are operated outside of the EEx e area and must be certified by an accredited certification authority.

The guidelines on the application of Directive 94/9/EC (ATEX 100a) on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres will be enforced as of 06.30.2003.

The XTPR manual motor protector is approved by the PTB according to the 94/9/EC (ATEX 100a) Directives.

Overview of the Devices

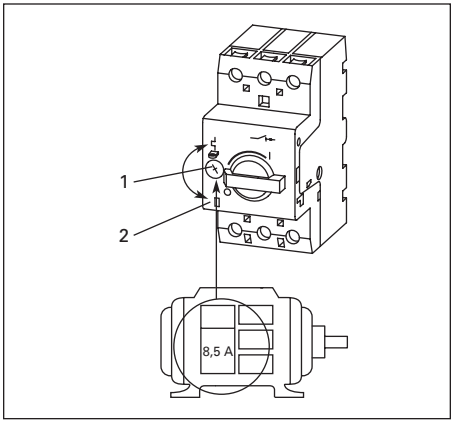

Figure 2-1: XTPR Frame B Manual Motor Protector

1. Motor current dial
2. Testing element

Unit Description

Overload Protection with Manual Motor Protector

The XTPR…BC1 is a three-phase electromechanical motor protector with bimetallic release for overload monitoring.

The XTPR…BC1 disconnects all phases from the mains circuit when an overload occurs. The current flow to the monitored motor is thus switched off directly.

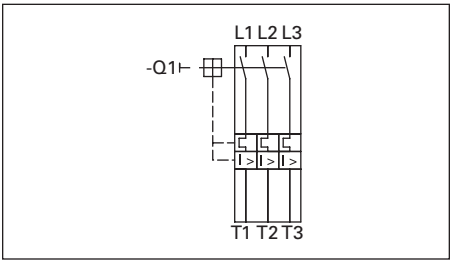

Figure 2-2: Circuit Diagram of the XTPR…BC1

Current Ranges of the XTPR Frame B Manual Motor Protector

The rated motor current is set on the XTPR units by means of a motor current dial [1] (see **Figure 2-1** on **Page 2-1**).

15 different types are available for monitoring motors with a rated current from 0.1 to 32A (see **Table 2-1**).

Table 2-1: Current Ranges of the XTPR…BC1

Type	Current Range I_e [A]
XTPRP16BC1	0.1 to 0.16
XTPRP25BC1	0.16 to 0.25
XTPRP40BC1	0.25 to 0.4
XTPRP63BC1	0.4 to 0.63
XTPR001BC1	0.63 to 1.0
XTPR1P6BC1	1.0 to 1.6
XTPR2P5BC1	1.6 to 2.5
XTPR004BC1	2.5 to 4
XTPR6P3BC1	4 to 6.3
XTPR010BC1	6.3 to 10
XTPR012BC1	8 to 12
XTPR016BC1	10 to 16
XTPR020BC1	16 to 20
XTPR025BC1	20 to 25
XTPR032BC1	26 to 32 open 26 to 30 encapsulated

Temperature Compensation

Two parameters influence the deflection of the bimetallic releases. There is for one the heat which is generated in proportion to the current flow, and secondly, the influence of the ambient temperature. The influence of the ambient temperature is automatically compensated within a temperature range from
-23°F to 104°F (-5°C to +40°C) by means of an additional current-free bimetallic release that continuously corrects the tripping range.

Phase Failure

The XTPR Frame B Manual Motor Protector is phase sensitive. The deflecting action of all three bimetallic releases is directed towards a tripping bridge that switches over a quick-break switch when the limit value is reached. At the same time, all three bimetallic releases shift the differential bridge. If the path of action of one of the bimetallic releases is reduced due to a phase loss, the differential bridge is retarded and the distance is converted into an additional tripping distance, which leads to an early tripping.

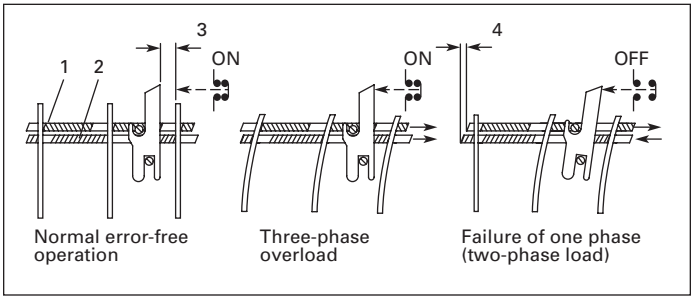

Figure 2-3: Function of the Phase Sensitivity by Means of Tripping and Differential Bridge

1. Tripping bridge
2. Differential bridge
3. Gap
4. Differential distance

Note: When an XTPR is to be used for monitoring an AC or DC motor, the current must flow across all three current paths in order to avoid early tripping.

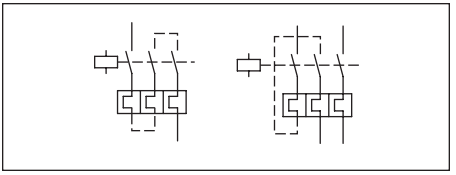

Figure 2-4: Wiring of the Manual Motor Protector for the Protection of AC or DC Motors (Bimetallic Release Switched in Series)

See "Tripping Characteristics XTPR…BC1" on **Page A-4**.

Reset

After tripping, the bimetallic releases must first cool down before the manual motor protector can be reset.

Note: The XTPR Frame B Manual Motor Protector can only be switched on locally.

Test Function

Proper functioning of the manual motor protector can be verified by means of the testing element [2] (see **Figure 2-1** on **Page 2-1**).

The active XTPR Frame B Manual Motor Protector is tripped by actuating the test release with the help of a screwdriver. This allows the user to verify the proper functioning of the manual motor protector in the commissioning phase.

Chapter 3 — Configuration

Overload Monitoring of EEx e (Explosive Areas) Motors

The motors are compliant to EEx e type of protection through special construction measures. The motors are assigned to temperature classes on the basis of the highest permissible surface temperatures. The temperature rise time t_E and the ratio between startup current and rated current I_A/I_N are calculated in addition and specified on the rating plate of the motor.

The temperature rise time t_E represents the time that expires for the temperature of the motor winding to rise from its final rated operational temperature up to the limit temperature, at a startup current of I_A.

However, EEx e motors are not intrinsically safe. Explosion safety can only be achieved by taking additional measures during installation and by selecting appropriate operating conditions (PTB testing regulations), e.g. by adding a correctly rated and set overload protection to the circuit.

Setup of the Overcurrent Protection System

⚠ WARNING

The selected current overload protection system must not only ensure proper motor current monitoring, but also that the seized motor is switched off within the temperature rise time t_E. This means that the protective device must be rated in such a way to ensure that the tripping time t_A for the ratio I_A/I_N of the EEx e motor is not higher than its temperature rise time t_E according to its characteristics curve, in order to safely switch off the motor within that period (see following example).

Example: $I_A/I_N = 6$, $t_E = 10$ s

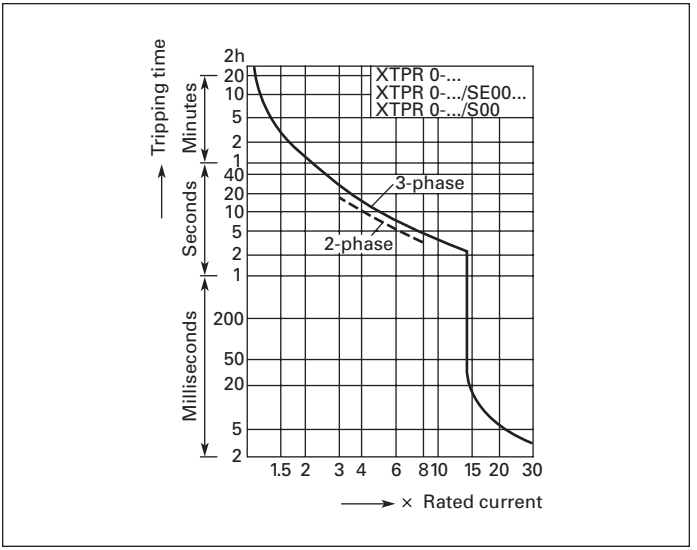

Figure 3-1: Tripping Characteristic of the Manual Motor Protector

The motor is reliably protected.

Short-Circuit Protection of the Manual Motor Protector

Table 3-1 shows the short-circuit breaking capacity of the XTPR Frame B Manual Motor Protector.

Fuse can be interconnected in the upstream circuit to increase the switching capacity to 100 kA.

Table 3-1: Switching Capacity of XTPR…BC1 with Type "1" and "2" Protection

I_u ① [A]	230V I_q ② [kA]	[A] ③	400V I_q ② [kA]	[A] ③	440V I_q ② [kA]	[A] ③	500V I_q ② [kA]	[A] ③	690V I_q ② [kA]	[A] ③
0.16 – 1	150	N	150	N	100	N	100	N	100	N
1.6		N		N		N		N		N
2.5		N		N		N		N	5	50
4		N		N		N		N	3	50
6.3		N		N		N	42	50	3	50
10		N		N	42	50	42	50	3	50
12	50	50	50	50	15	50	15	50	3	50
16	50	50	50	50	15	50	15	50	3	50
20	50	50	50	50	10	50	6	50	3	50
25	50	50	50	50	10	50	6	50	3	50
32	50	50	50	50	10	50	6	50	3	50

① Rated continuous current I_u.

② Conditional rated short-circuit current I_q IEC/EN 60947-4-1.

③ Primary fusing is required if the short-circuit current exceeds the conditional rated short-circuit current ($I_{cc} > I_q$). The conditional rated short-circuit current is determined by the primary fuse used:

100A gG/gL, I_q = 30 kA
50A gG/gL, I_q = 100 kA

☐ =No upstream protective device required, since this is an inherent stable range (100/150 kA)

N =Not required

Approvals

The XTPR Frame B Manual Motor Protector is compliant with IEC/EN 60947 regulations for low-voltage switchgear and fulfills the requirements of the 94/9/EC (ATEX 100a) directives for the protection of EEx e motors.

Furthermore, motors in zones 21 and 22 (zones with combustible dusts) can be protected conform to EN 50281-1-1 and EN 50281-1-2. The motor outgoer wiring should be implemented in compliance to IEC/EN 60947-1, table 9.

CE 0102 Ex II(2)GD

The system is approved by UL and CSA for the USA and Canada.

Further approvals exist for —

- Poland
- Russia
- Slovak Republic
- Turkey
- Ukraine

Chapter 4 — Installation

Notes on Installation

Note: The mechanical and electrical installation instructions Pub51173 on the inside of the cardboard package must be observed.

⚠ WARNING

A manual reset may be carried out locally by trained personnel or in the control room.

Mounting the Devices

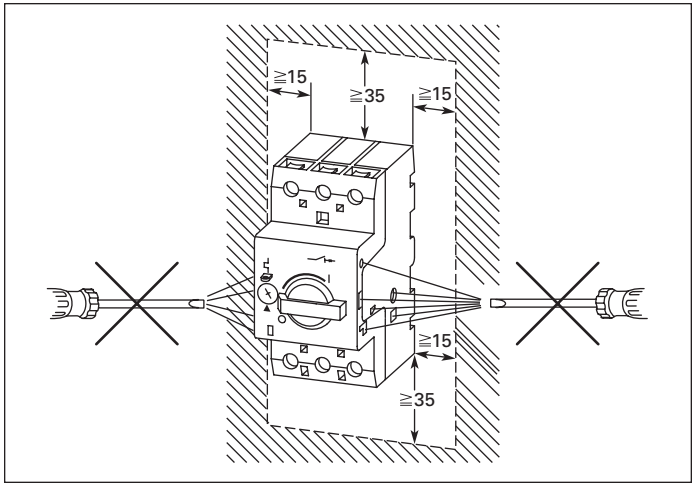

Figure 4-1: Mounting the XTPR…BC1

1. Always mount the manual motor protector as shown in **Figure 4-2**.

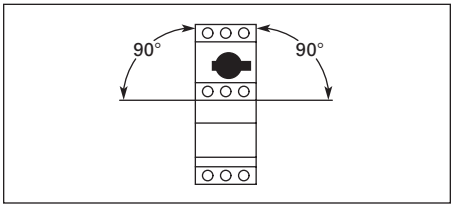

Figure 4-2: Approved Mounting Positions of the XTPR…BC1

2. Wire the motor cables.

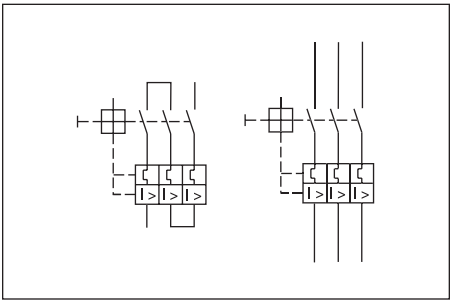

Figure 4-3: Mains Wiring

The following conductor cross-sections can be used.

Table 4-1: Maximum Conductor Cross-Sections of the Motor Cables

Type	Size	Torque
	1 to 6 mm	1.7 Nm
	1 to 4 mm	1.7 Nm
UL	AWG14 to 10 Cu 75°C	1.8 Nm/16 lb/in WIRE

Chapter 5 — Operating the Devices

Settings

The rated motor current must be set on the manual motor protector by means of the motor current dial (**Table 2-1** on **Page 2-2**) prior to initial commissioning.

Test

The manual motor protector is equipped with a testing element [2] (**Figure 2-1** on **Page 2-1**). The active XTPR Frame B Manual Motor Protector is tripped by actuating the test release with the help of a screwdriver. This opens all power contacts and thus removes the output lines from the voltage source.

⚠ WARNING

Faulty devices may not be opened for repairs and may only be replaced by qualified personnel.

⚠ CAUTION

If the manual motor protector is installed at a cool location (e.g. 23°F [-5°C]) and the motor is installed at a warm motor location (e.g. 104°F [40°C]), it is possible that there will be a delayed release during an overload if the devices are operated in the lower current setting range.

Appendix A

Rating Plate XTPR...BC1

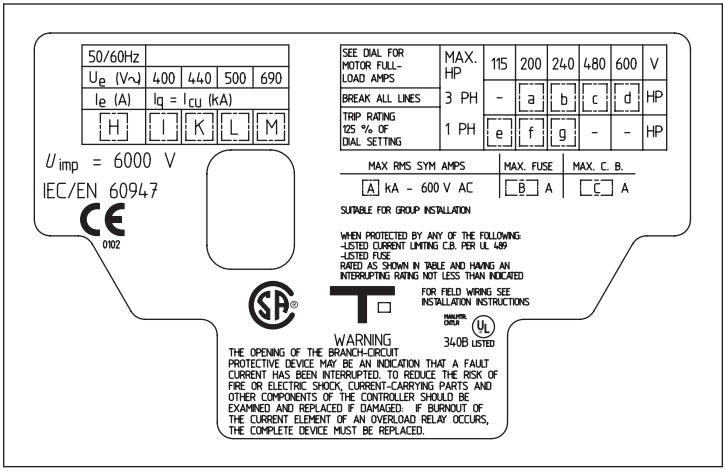
50/60Hz
Ue (V~) 400 440 500 690
Ie (A) Iq = Icu (kA)
H I K L M
Uimp = 6000 V
IEC/EN 60947
CE
0102
SEE DIAL FOR MOTOR FULL-LOAD AMPS
BREAK ALL LINES
TRIP RATING 125 % OF DIAL SETTING
MAX. HP
115 200 240 480 600 V
3 PH - a b c d HP
1 PH e f g - - HP
MAX RMS SYM AMPS
A kA - 600 V AC
MAX. FUSE
B A
MAX. C. B.
C A
SUITABLE FOR GROUP INSTALLATION
WHEN PROTECTED BY ANY OF THE FOLLOWING:
-LISTED CURRENT LIMITING C.B. PER UL 489
-LISTED FUSE
RATED AS SHOWN IN TABLE AND HAVING AN INTERRUPTING RATING NOT LESS THAN INDICATED
FOR FIELD WIRING SEE INSTALLATION INSTRUCTIONS
MANUFR. CMBR
340B LISTED
WARNING
THE OPENING OF THE BRANCH-CIRCUIT PROTECTIVE DEVICE MAY BE AN INDICATION THAT A FAULT CURRENT HAS BEEN INTERRUPTED. TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CURRENT-CARRYING PARTS AND OTHER COMPONENTS OF THE CONTROLLER SHOULD BE EXAMINED AND REPLACED IF DAMAGED. IF BURNOUT OF THE CURRENT ELEMENT OF AN OVERLOAD RELAY OCCURS, THE COMPLETE DEVICE MUST BE REPLACED.

Figure A-1: Rating Plate XTPR...BC1

For information on the assignment of values to the relevant types, please refer to **Tables A-1** and **A-2**.

Table A-1: Rating Data of the Various Types for North America

Type	a	b	c	d	e	f	g	A	B	C	D	E	G
XTPRP16BC1								50	600	600	—	—	—
XTPRP25BC1													
XTPRP40BC1													
XTPRP63BC1													
XTPR001BC1			1/2	1/2									
XTPR1P6BC1			3/4	1			1/10						
XTPR2P5BC1	1/2	1/2	1	1-1/2	—	1/8	1/6						
XTPR040BC1	1	1	2	3	1/8	1/4	1/3						
XTPR6P3BC1	1-1/2	1-1/2	3	5	1/4	1/2	1/2						
XTPR010BC1	3	3	7-1/2	10	1/2	1	1-1/2	10	150	125	22	600	125
XTPR012BC1	3	3	7-1/2	10	1/2	1	1-1/2				—	—	—
XTPR016BC1	3	5	10	10	1	2	2						
XTPR020BC1	5	5	10	15	1-1/2	3	3						
XTPR025BC1	5	7-1/2	15	20	1-1/2	3	3						
XTPR032BC1	7-1/2	10	25	30	1-1/2	3	3						

Table A-2: Further Rating Data of the Individual Types

Type	H	I	K	L	M	N	P
XTPRP16BC1	0.16	150	100	100	100	100	100
XTPRP25BC1	0.25						
XTPRP40BC1	0.4						
XTPRP63BC1	0.63						
XTPR001BC1	1.0						
XTPR1P6BC1	1.6						
XTPR2P5BC1	2.5				5		5
XTPR004BC1	4.0				3		5
XTPR6P3BC1	6.3			42		6	3
XTPR010BC1	10		42	42		6	3
XTPR012BC1	12	50	15	15		—	—
XTPR016BC1	16		15	15			
XTPR020BC1	20		10	6			
XTPR025BC1	25						
XTPR032BC1	32						

Tripping Characteristics XTPR…BC1

XTPRP16BC1

Table A-3: XTPRP16BC1 — Technical Data

Item	Specification
Range	0.1 – 0.16A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-4: XTPRP16BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	19.0	11.8	18.0	10.0
7.2 x *I*	4.4	3.1	4.3	2.8

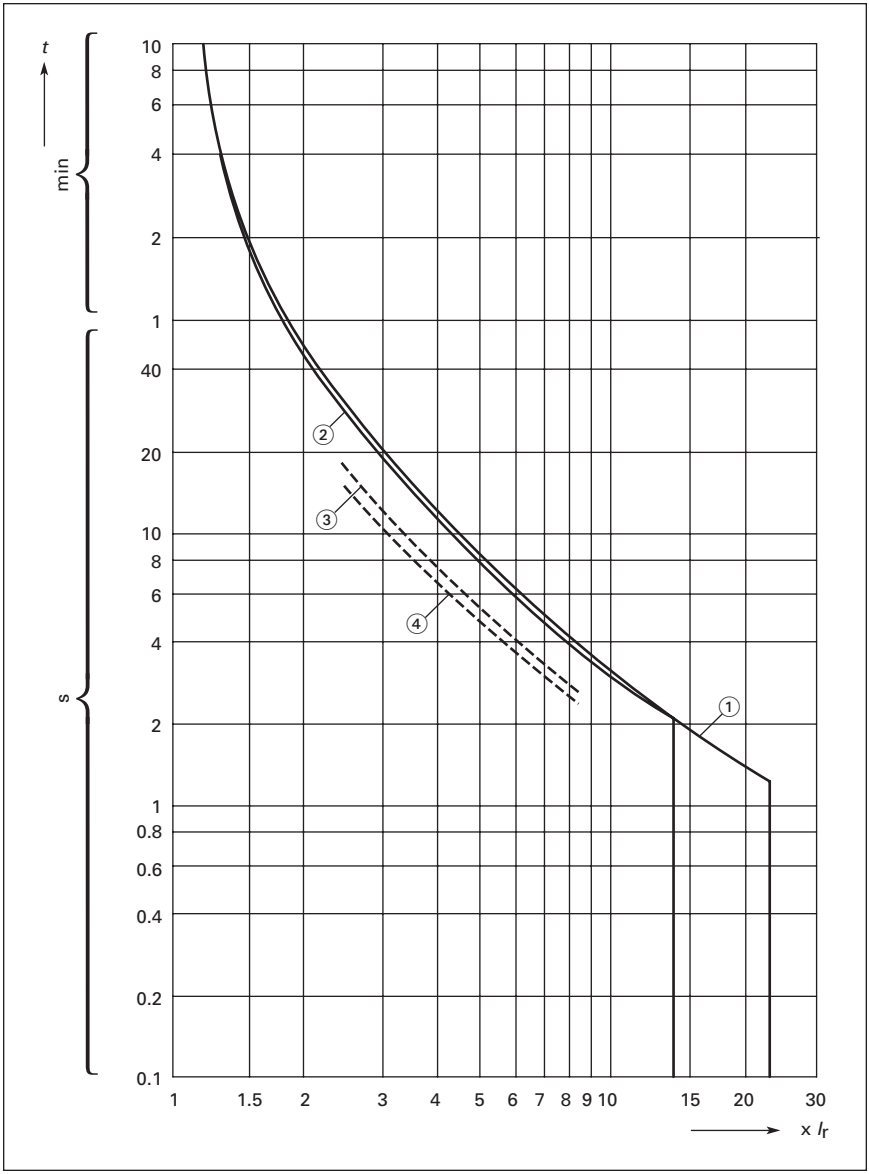

Figure A-2: XTPRP16BC1

XTPRP25BC1

Table A-5: XTPRP25BC1 — Technical Data

Item	Specification
Range	0.16 – 0.25A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-6: XTPRP25BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	20.5	13.0	19.7	11.3
7.2 x *I*	4.7	3.7	4.6	3.3

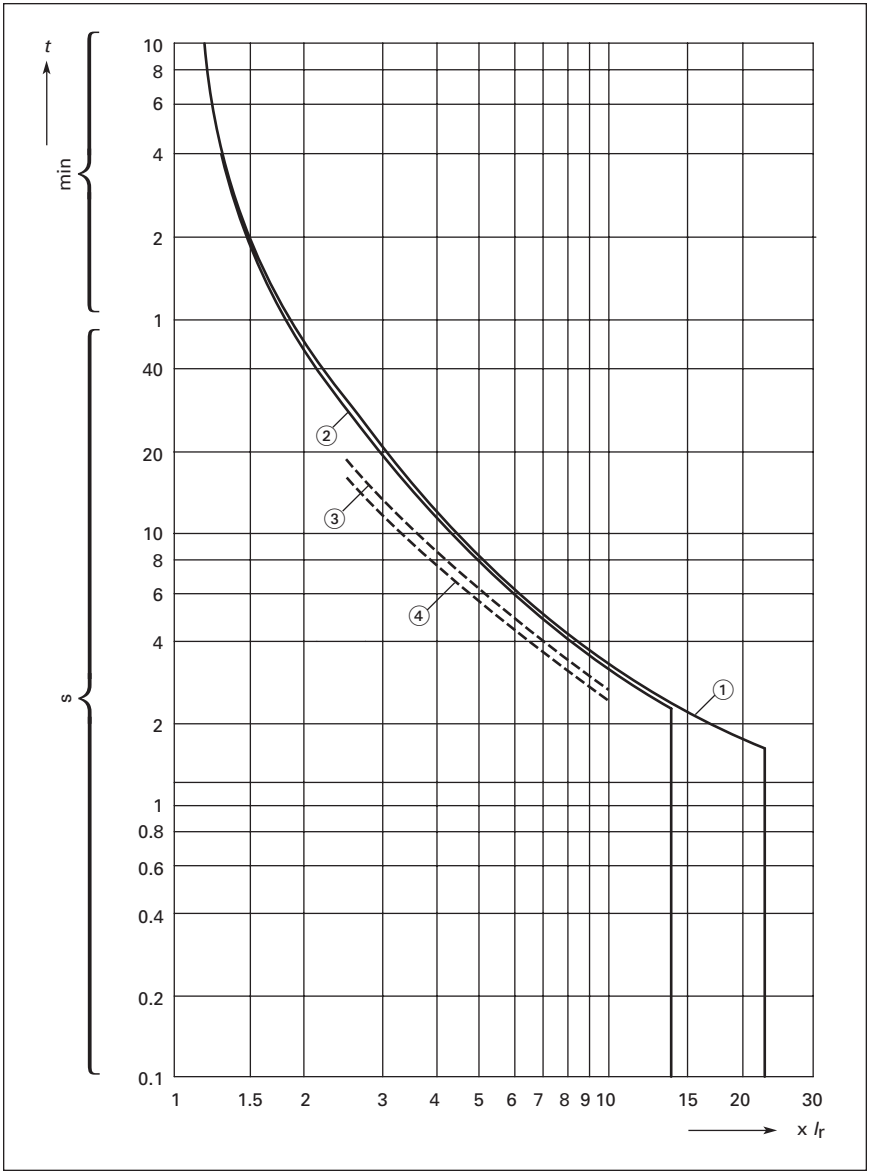

Figure A-3: XTPRP25BC1

XTPRP40BC1

Table A-7: XTPRP40BC1 — Technical Data

Item	Specification
Range	0.25 – 0.4A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-8: XTPRP40BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	19.0	12.5	17.5	10.8
7.2 x *I*	4.2	3.2	3.8	2.9

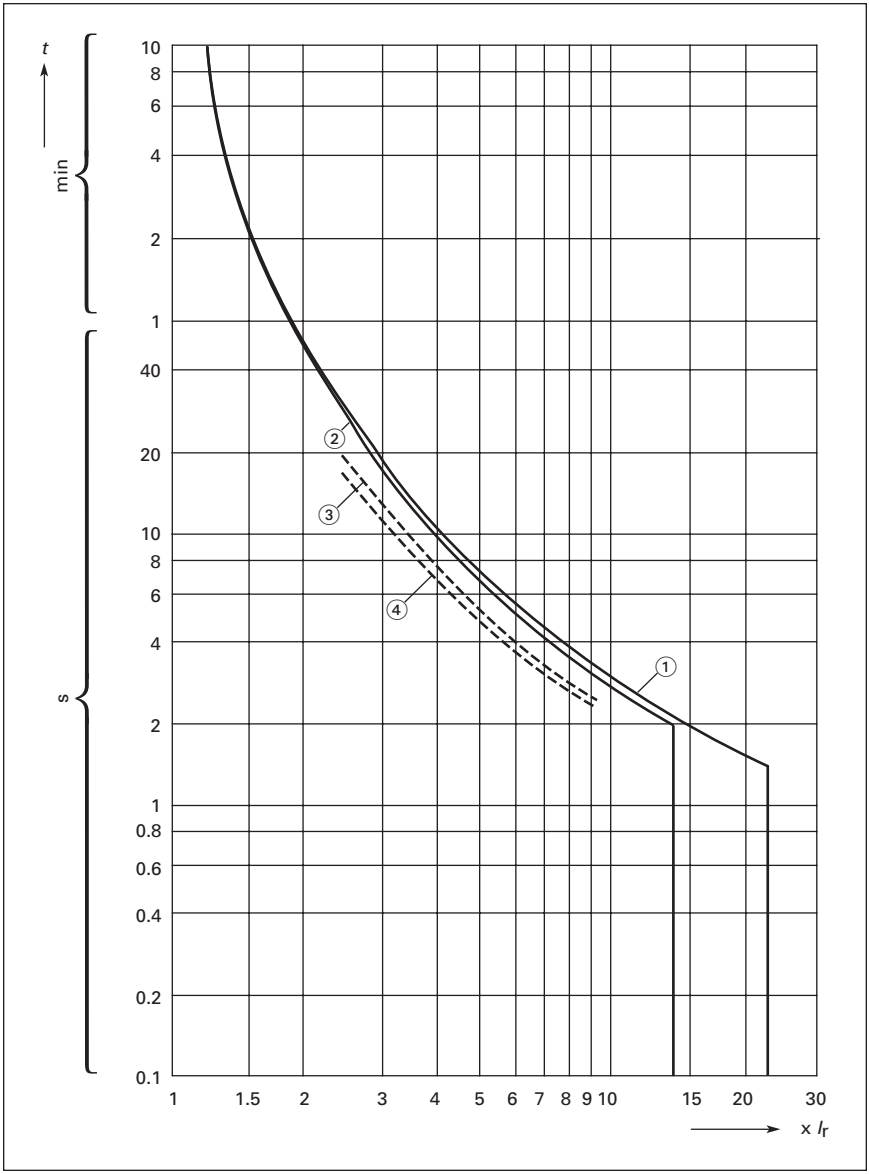

Figure A-4: XTPRP40BC1

XTPRP63BC1

Table A-9: XTPRP63BC1 — Technical Data

Item	Specification
Range	0.4 – 0.63A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-10: XTPRP63BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	22.5	15.0	21.0	14.3
7.2 x *I*	5.3	4.3	5.1	4.2

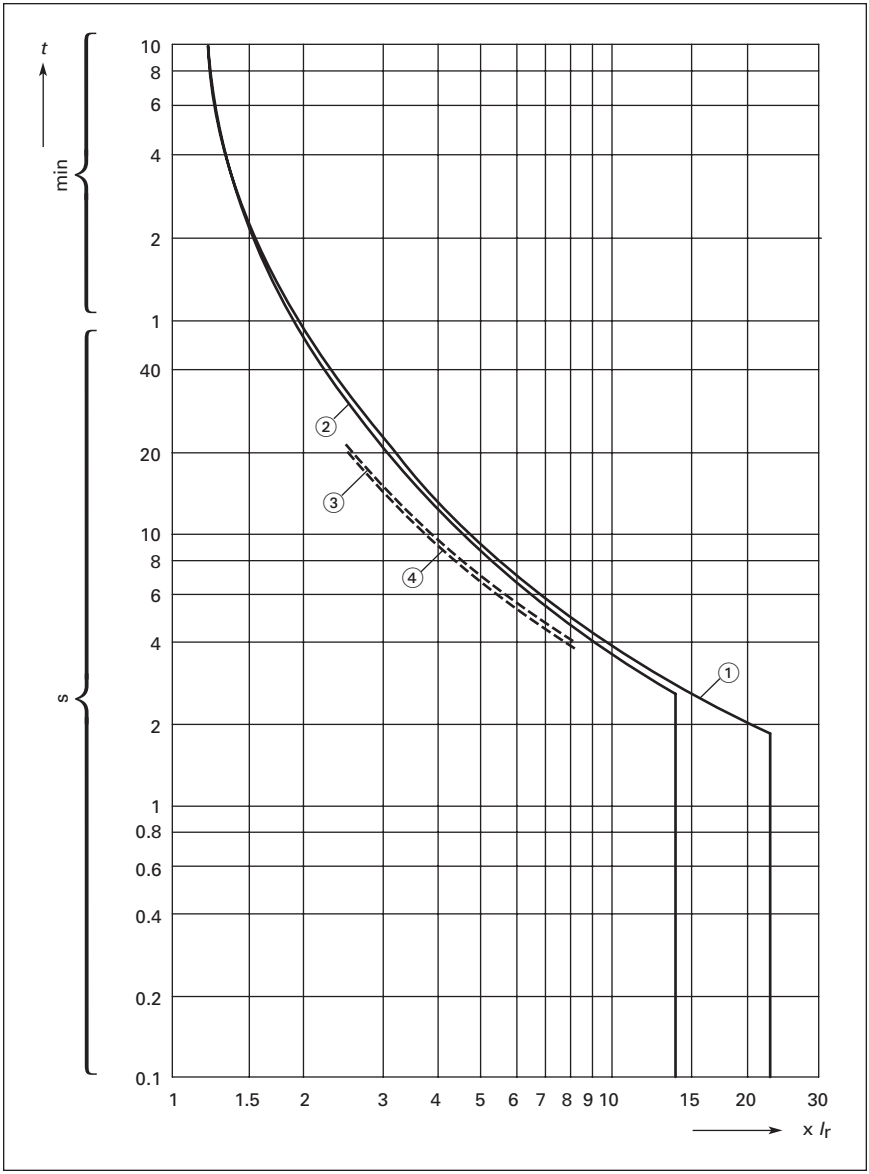

Figure A-5: XTPRP63BC1

XTPR001BC1

Table A-11: XTPR001BC1 — Technical Data

Item	Specification
Range	0.63 – 1A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-12: XTPR001BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	26.5	17.5	25.0	15.0
7.2 x *I*	6.3	5.0	6.0	4.5

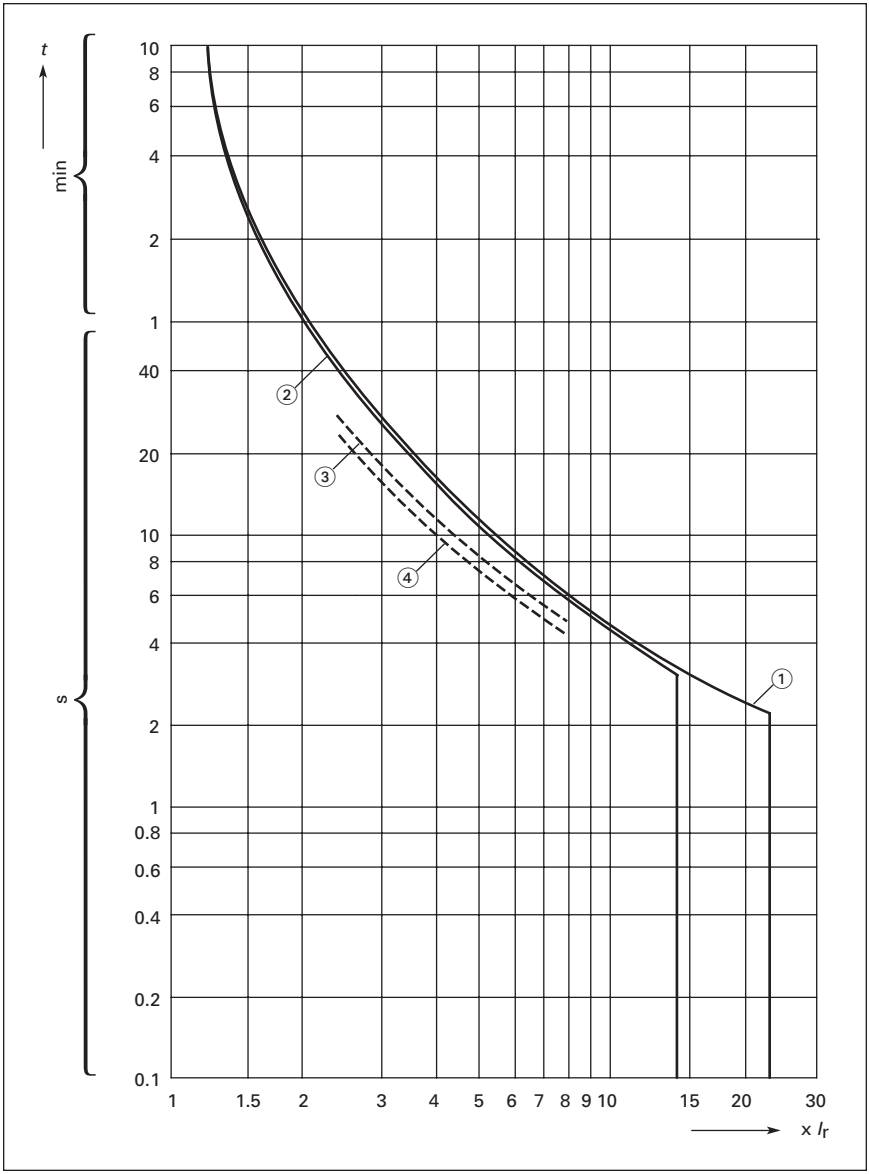

Figure A-6: XTPR001BC1

XTPR1P6BC1

Table A-13: XTPR1P6BC1 — Technical Data

Item	Specification
Range	1 – 1.6A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-14: XTPR1P6BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	27.0	17.7	25.0	15.9
7.2 x *I*	6.8	5.4	6.4	4.9

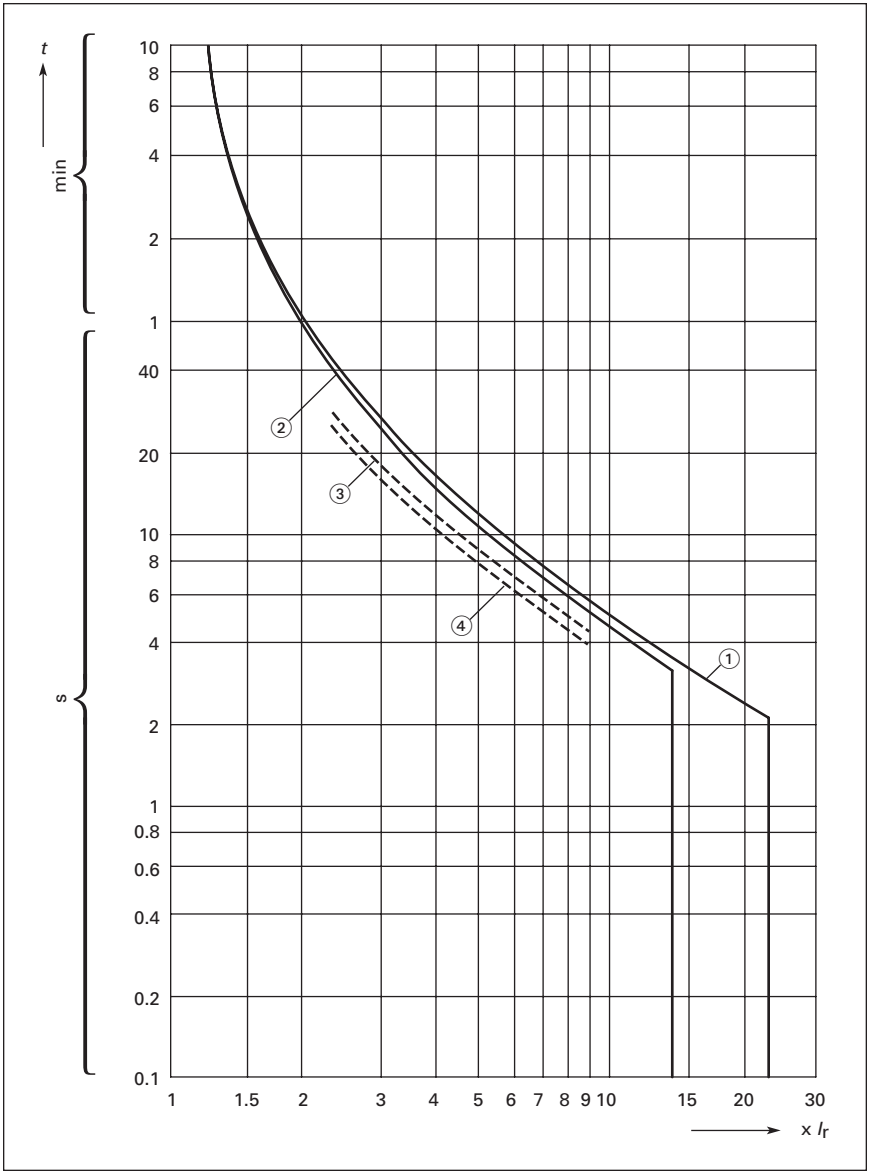

Figure A-7: XTPR1P6BC1

XTPR2P5BC1

Table A-15: XTPR2P5BC1 — Technical Data

Item	Specification
Range	1.6 – 2.5A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-16: XTPR2P5BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	35.0	21.5	33.0	19.0
7.2 x *I*	8.7	6.3	8.0	5.5

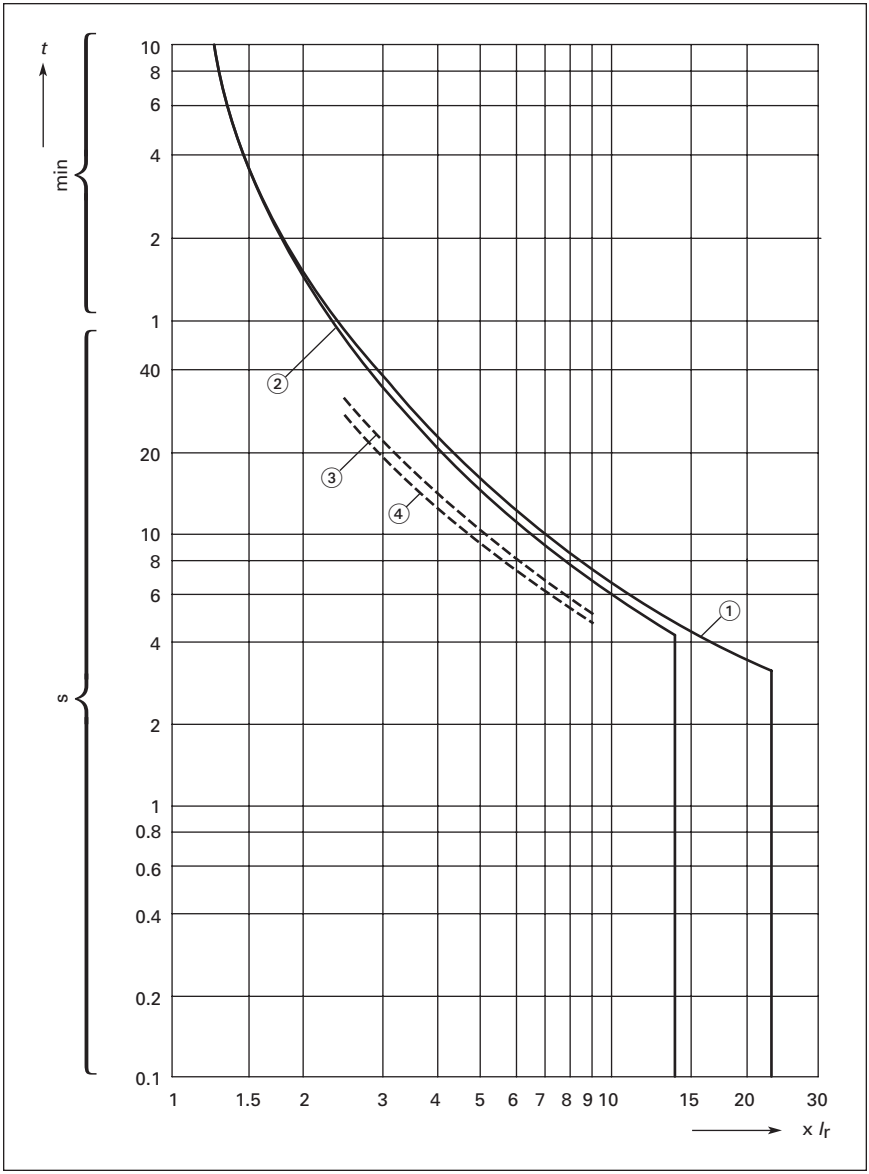

Figure A-8: XTPR2P5BC1

XTPR004BC1

Table A-17: XTPR004BC1 — Technical Data

Item	Specification
Range	2.5 – 4A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-18: XTPR004BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	31.0	22.1	29.5	19.0
7.2 x *I*	7.8	6.0	7.3	5.5

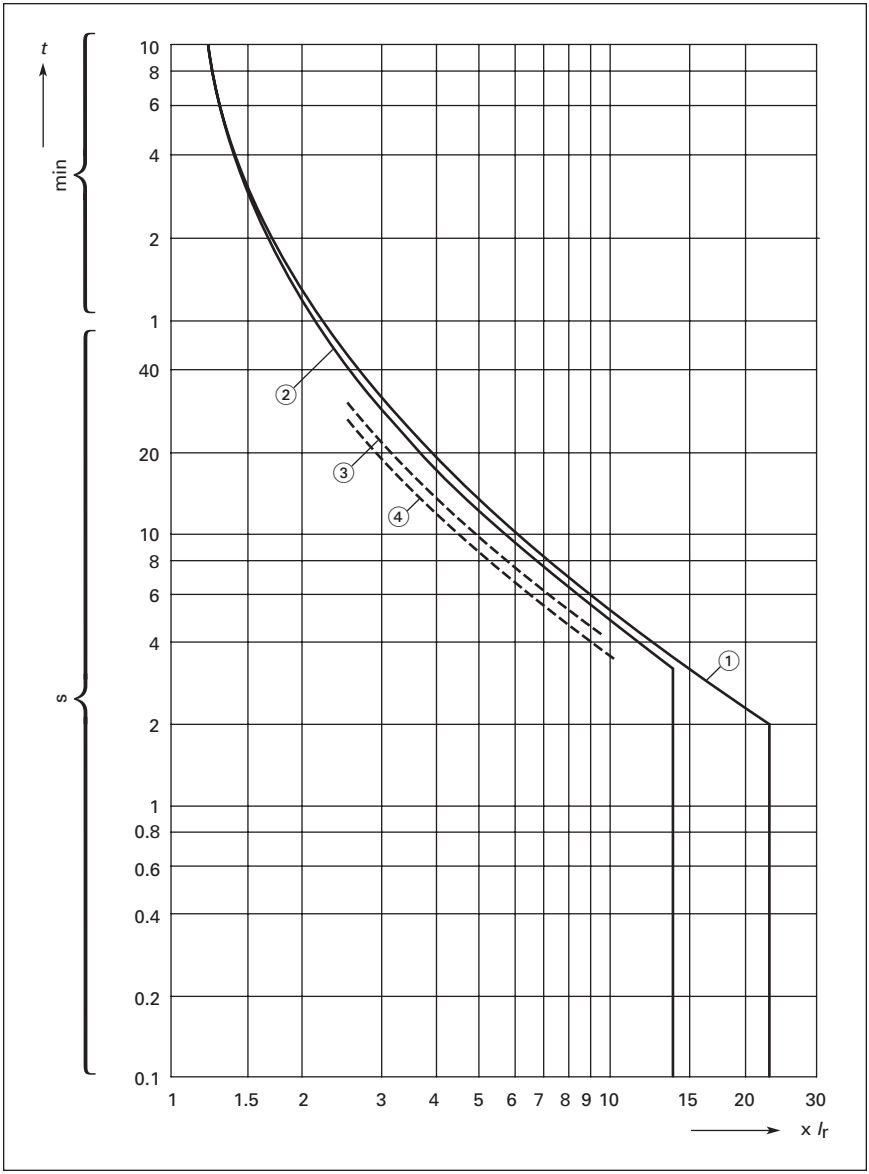

Figure A-9: XTPR004BC1

XTPR6P3BC1

Table A-19: XTPR6P3BC1 — Technical Data

Item	Specification
Range	4 – 6.3A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-20: XTPR6P3BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	36.0	22.5	32.5	19.0
7.2 x *I*	8.1	5.8	7.5	5.0

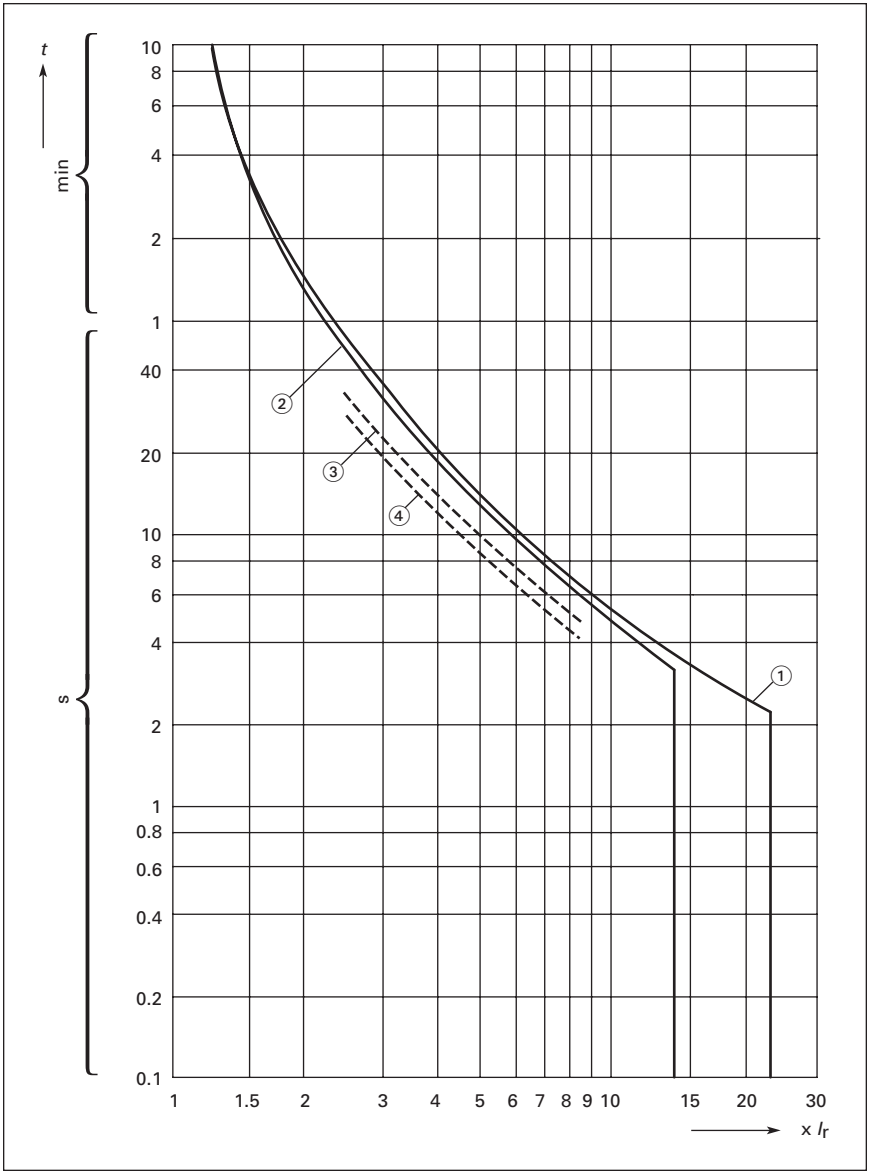

Figure A-10: XTPR6P3BC1

XTPR010BC1

Table A-21: XTPR010BC1 — Technical Data

Item	Specification
Range	6.3 – 10A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-22: XTPR010BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	31.5	20.5	28.0	17.5
7.2 x *I*	5.4	4.1	5.0	3.3

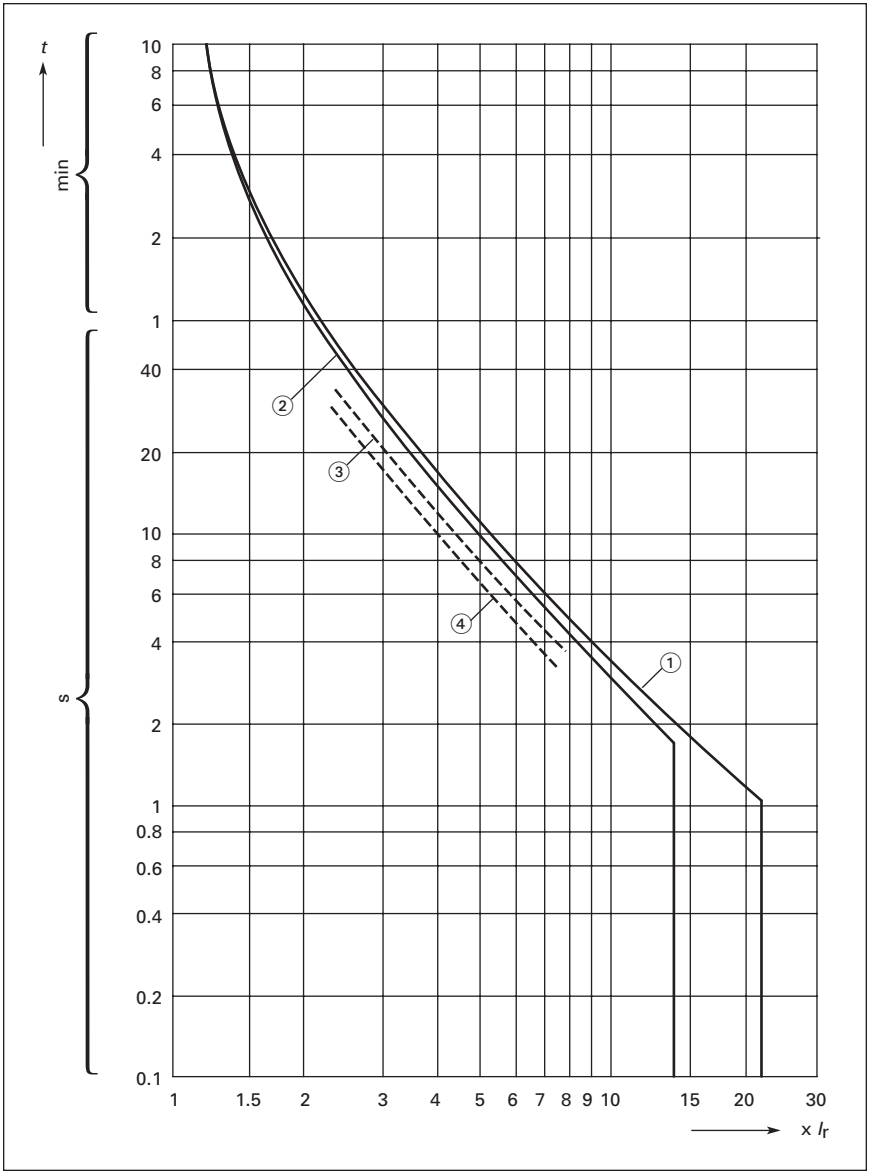

Figure A-11: XTPR010BC1

XTPR012BC1

Table A-23: XTPR012BC1 — Technical Data

Item	Specification
Range	8 – 12A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-24: XTPR012BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	27.3	20.8	24.5	16.1
7.2 x *I*	4.45	3.4	4.0	2.7

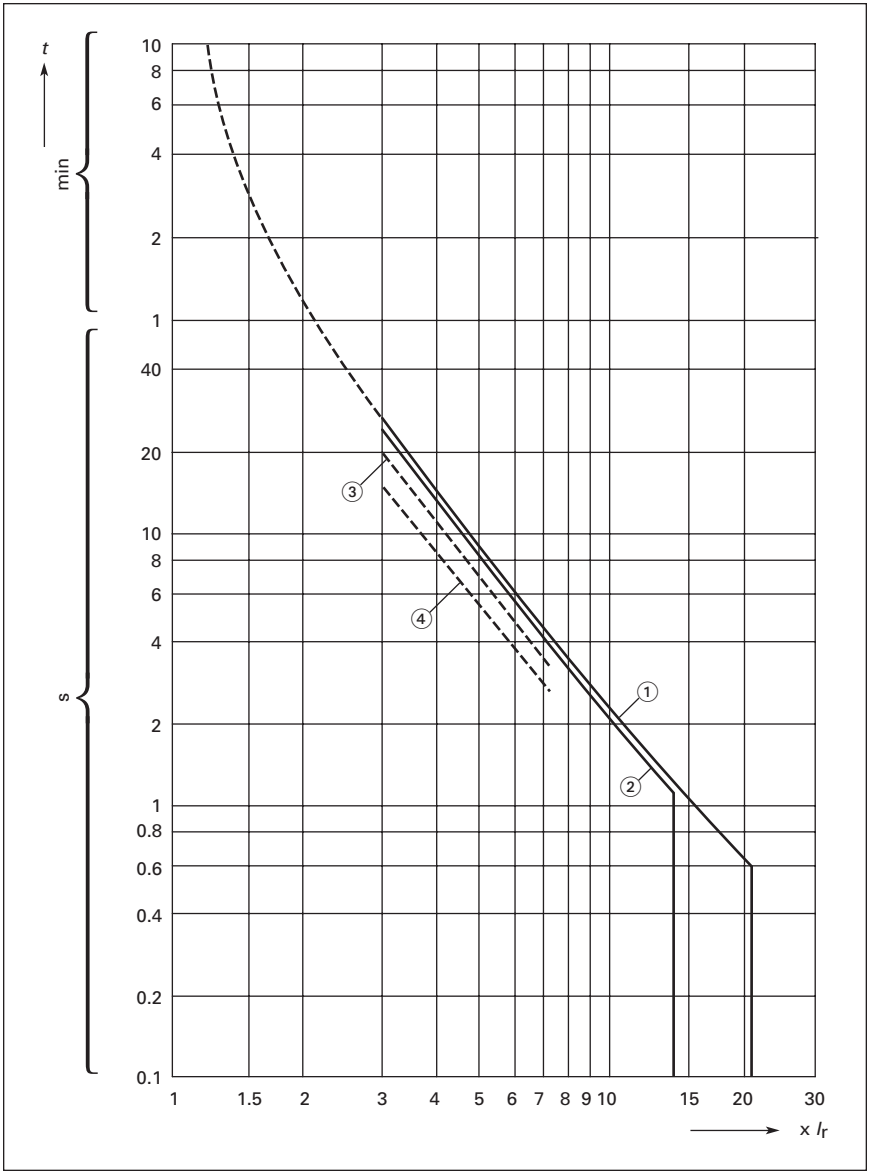

Figure A-12: XTPR012BC1

XTPR016BC1

Table A-25: XTPR016BC1 — Technical Data

Item	Specification
Range	10 – 16A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-26: XTPR016BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	34.0	22.5	31.0	19.5
7.2 x *I*	7.1	5.4	6.5	4.5

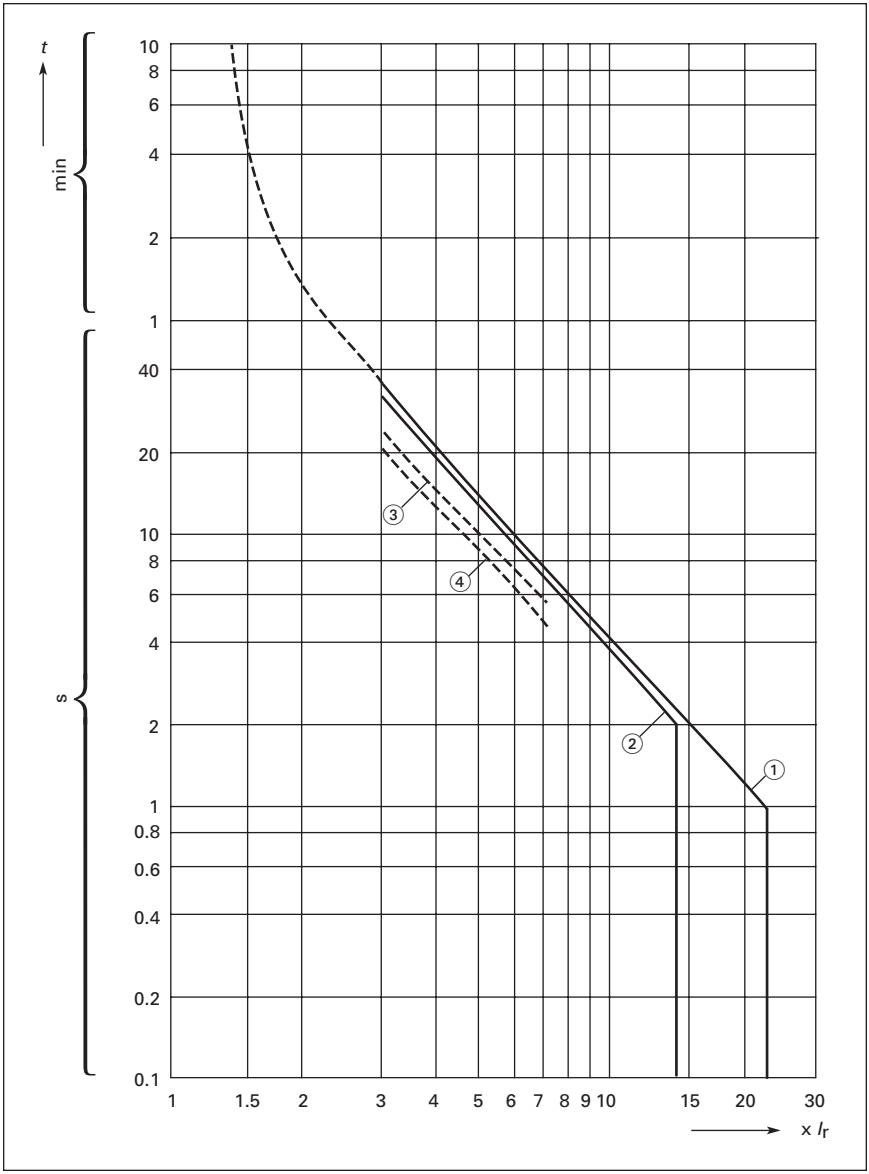

Figure A-13: XTPR016BC1

XTPR020BC1

Table A-27: XTPR020BC1 — Technical Data

Item	Specification
Range	16 – 20A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-28: XTPR020BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	42.0	25.5	41.0	24.0
7.2 x *I*	6.0	3.9	5.9	3.8

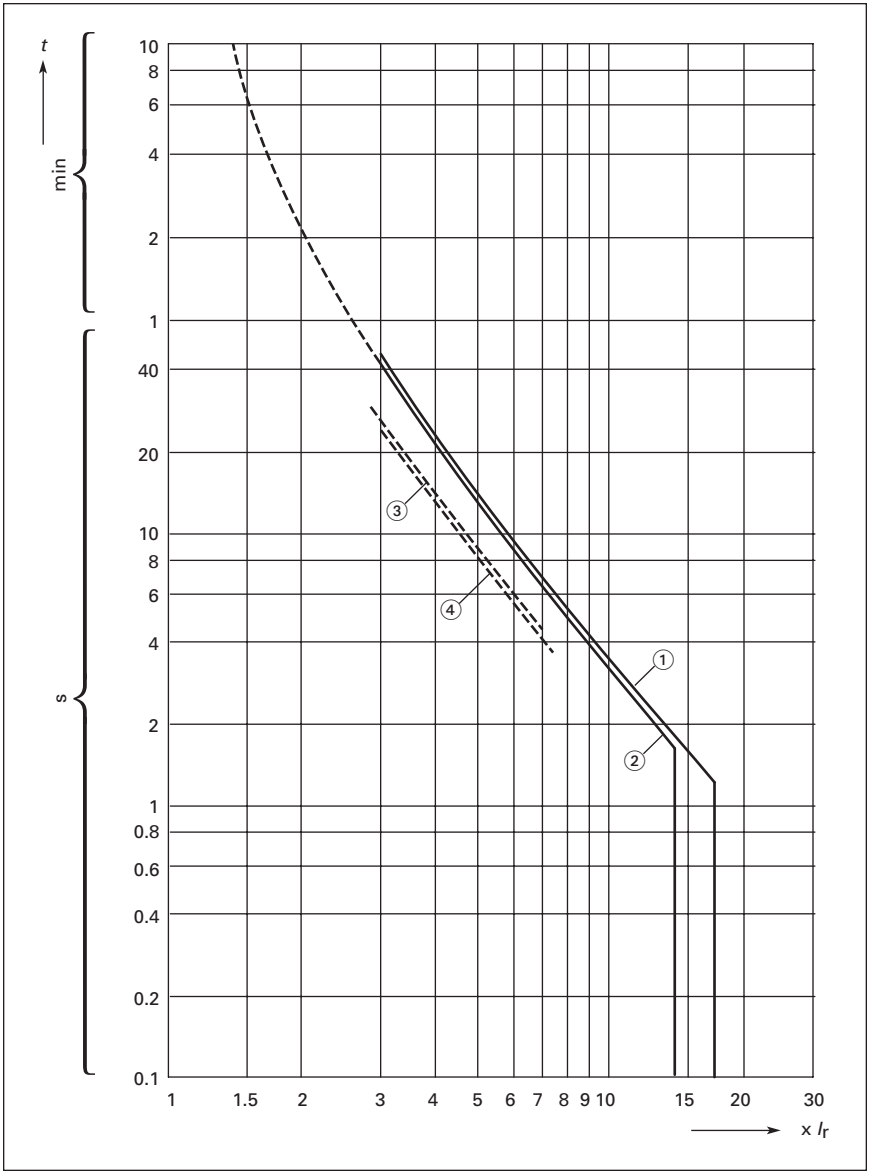

Figure A-14: XTPR020BC1

XTPR025BC1

Table A-29: XTPR025BC1 — Technical Data

Item	Specification
Range	20 – 25A (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-30: XTPR025BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	52.0	32.0	48.0	29.5
7.2 x *I*	7.4	4.9	7.1	4.6

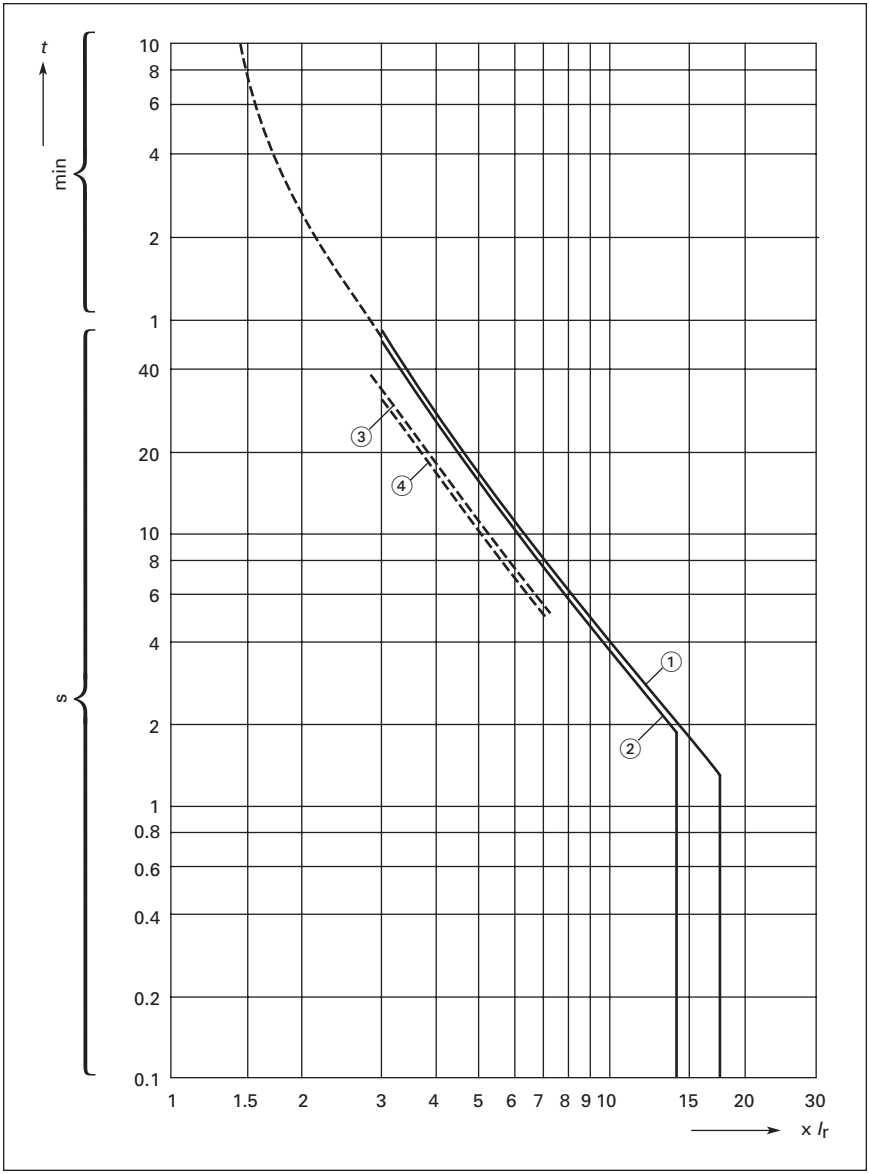

Figure A-15: XTPR025BC1

XTPR032BC1

Table A-31: XTPR032BC1 — Technical Data

Item	Specification
Range	26 – 32A open (NM – HM) 26 – 30A encapsulated (NM – HM)
Ambient temperature	68°F (20°C)
Tripping class	10A
Tolerance range	± 20%

Table A-32: XTPR032BC1 — Tripping Time

	Tripping Time *t* [s]			
	NM		HM	
Setting	Three-Phase ①	Two-Phase ③	Three-Phase ②	Two-Phase ④
3 x *I*	58.0	⑤	58.0	⑤
7.2 x *I*	8.3	⑤	8.3	⑤

⑤ On request.

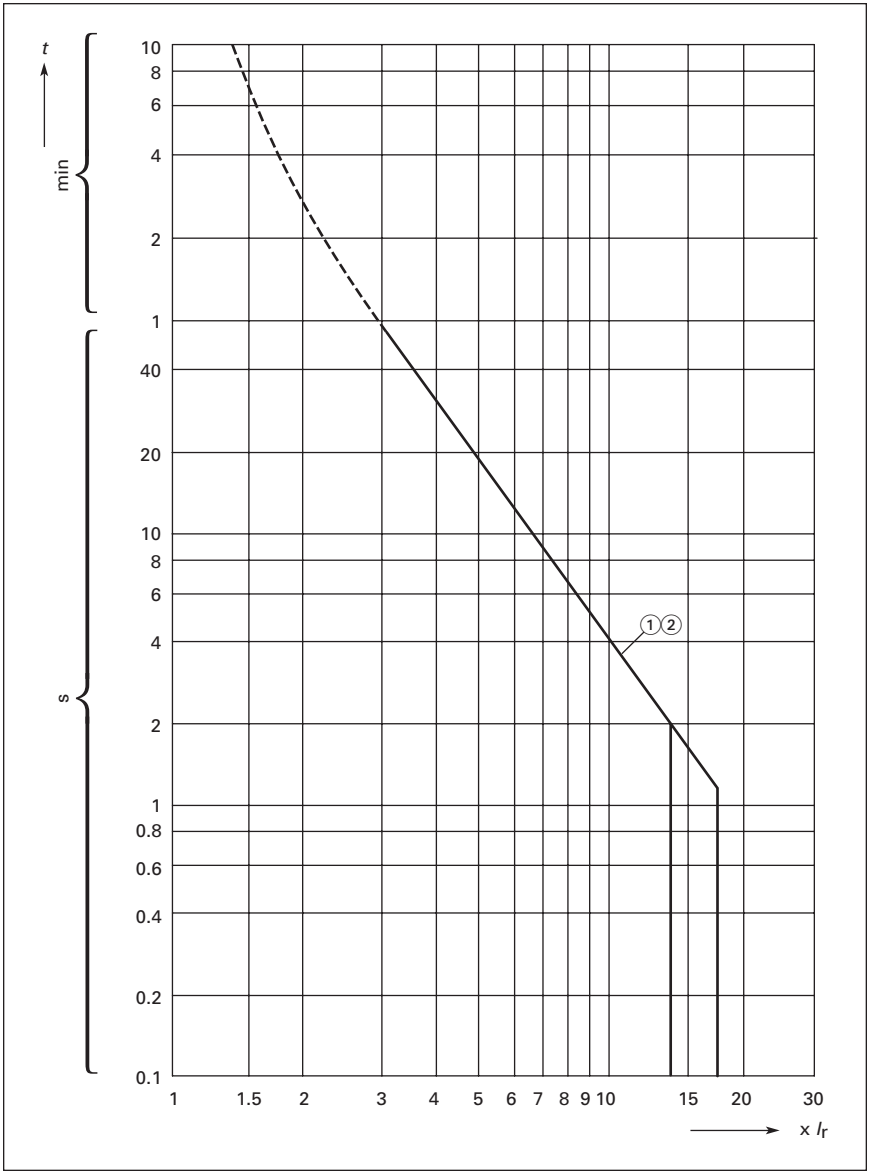

Figure A-16: XTPR032BC1

EC Declaration of Conformity

We, Eaton Electrical, declare under our sole responsibility that our product:

XT Manual Motor Protector and Accessories — Frame B

(Product Name)

CE

with the following type reference:

XTPR...BC1, XTPRC...BC1
XTPRSC...BC1, XTPT...BC1

(Model Name)

to which this declaration relates is in conformity with the following standard(s) or normative document(s):

EN 60947-1:1999 + A1:2000 + A2:2001
EN 60947-2:1996 + A1:1997 + A2:2001
EN 60947-3:1999 + A1:2001
EN 60947-4-1:2001 + A1:2002
EN 60947-5-1:1997 + A12:1999 + A1:1999 + A2:2000
EN 50274:2002

and is in accordance with the provisions of the following EC-directive(s):

Low Voltage Directive 73/23/EEC + 93/68/EEC
EMC Directive 89/336/EEC + 92/31/EEC + 93/68/EEC

The CE marking was affixed in the year 2006.

This declaration is issued from:

Eaton Corporation
Standard and Logic Control BU — Industrial Control Division
4201 N. 27th Street
Milwaukee, Wisconsin 53216 USA

on 31 January 2006.

Issued by: **Eaton Electrical Inc.**

Christopher J. Roche

(Name)

Senior Manager, Product Development Standard and Logic Control BU
Industrial Control Division

(Position/Title)

CMS Name	Approval Date	Revision Date	Revision No.	Revision Control
466-1054	31 January 2006		01	This document must be modified through CMS.

May 2006

Annex to EC Declaration of Conformity for XT Manual Motor Protector and Accessories — Frame B, 466-1054 dated 31 January 2006

Accessories:

XTPAXFAEM20
XTPAXCL
XTPAXCLK(A)(B)(C)
XTPAXIT
XTPAXLSA
XTPAXRHM165B
XTPAXRHM265RY
XTPAXRHM365B
XTPAXRHM465RY
XTPAXRHMSFT
XTPAXSATR(02)(20)
XTPAXSR…V…
XTPAXSRC…V…
XTPAXSW
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Company Information

Eaton's electrical business is a global leader in electrical control, power distribution, and industrial automation products and services. Through advanced product development, world-class manufacturing methods, and global engineering services and support, Eaton's electrical business provides customer-driven solutions under brand names such as Cutler-Hammer®, Powerware®, Durant®, Heinemann®, Holec® and MEM®, which globally serve the changing needs of the industrial, utility, light commercial, residential, and OEM markets. For more information, visit **www.EatonElectrical.com**.

Eaton Corporation is a diversified industrial manufacturer with 2005 sales of $11.1 billion. Eaton is a global leader in electrical systems and components for power quality, distribution and control; fluid power systems and services for industrial, mobile and aircraft equipment; intelligent truck drivetrain systems for safety and fuel economy; and automotive engine air management systems, powertrain solutions and specialty controls for performance, fuel economy and safety. Eaton has 60,000 employees and sells products to customers in more than 125 countries. For more information, visit **www.eaton.com**.

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Publication No. MN03402005E/CPG
May 2006